Due Date: May 3, 2005

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

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| In re Application of: | ) | |
| | ) | |
| Inventor: Nemmara Chithambaram | ) | Examiner: Joseph P. Hirl |
| | ) | |
| Serial #: 10/034,442 | ) | Group Art Unit: 2121 |
| | ) | |
| Filed: December 26, 2001 | ) | Appeal No.: _____ |
| | ) | |

Title: FUZZY LOGIC REASONING FOR INFERRING USER LOCATION PREFERENCES

## BRIEF OF APPELLANT

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In accordance with 37 CFR §41.37, Appellant hereby submits the Appellant's Brief on Appeal from the final rejection in the above-identified application, as set forth in the Office Action dated November 3, 2004.

Please charge the amount of $500.00 to cover the required fee for filing this Appeal Brief as set forth under 37 CFR §41.37(a)(2) and 37 CFR §41.20(b)(2) to Deposit Account No. 50-0494 of Gates & Cooper LLP. Also, please charge any additional fees or credit any overpayments to Deposit Account No. 50-0494.

### I. REAL PARTY IN INTEREST

The real party in interest is Autodesk, Inc., the assignee of the present application.

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## II. RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences for the above-referenced patent application.

## III. STATUS OF CLAIMS

Claims 6-8, 20-22, and 34-36 have been cancelled

Claims 1-5, 9-19, 23-33 and 37-51 are pending in the application.

Claims 44, 46, and 48 have been objected to under 37 CFR 1.75 as being a substantial duplicate of claims 43, 45, and 47.

Claims 1-5, 9-19, 23-33, and 37-51 were rejected under 35 U.S.C. §102(e) as being anticipated by LeBlanc et al. U.S. Patent 6,236,365 (LeBlanc).

## IV. STATUS OF AMENDMENTS

No amendments to the claims have been made subsequent to the final Office Action.

## V. SUMMARY OF CLAIMED SUBJECT MATTER

Location based services (LBS) are services that utilize or are based on the location of a device (e.g., traffic updates, location sensitive billing, fleet management, and asset and people tracking). Accordingly, to provide LBS, knowledge of the location of a mobile device is fundamental. However, the prior art only determines a device location at a very course level (e.g., with precision ranging in 100s of meters or even 1000 meters or more). (See paragraph [0013]).

Independent claims 1, 15, and 29 are generally directed to refining an approximate location of a mobile device (see paragraph [0012]). First, An approximate location of a device is obtained (see paragraph [0106]). Thereafter, fuzzy logic is used to refine the location (see paragraph [0106] and FIG. 7).

To utilize the fuzzy logic, a rule base (consisting of an ordered collection of rules) is obtained (see paragraph [0106]). Imprecise input relating to the location of the device is then obtained (see paragraph [0108]). The claims specifically provide that the imprecise input may be based on at least one of three various criteria: (1) a proximity to a particular user identified location; (2) a similarity



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between a current user's activity and a particular established activity profile; or (3) whether a current time is within a particular temporal range or temporal profile (see paragraphs [0059]-[0064], [0081]-[0083], and [0108]).

The imprecise input is then processed wherein it is determined how much (i.e., the magnitude) each input participates in the rules (of the rule set) (see paragraph [0086] and [0109]). The rules are then applied to the imprecise input based on the magnitude of participation (see paragraph [0010]). The rules are applied by producing a logical product (see paragraph [0010]]). Based on the logical product, a refined location is obtained (see paragraph [0010]).

Thus, the claims specifically provide for two different pieces of information. First, an approximate location of a device is obtained. Thereafter, imprecise input is obtained. As set forth in the claims, the imprecise input may be based on several items: (1) a proximity (i.e., of the approximate location of the device) to a particular user identified location; (2) a similarity between a current user's activity and a particular established activity profile; or (3) whether a current time is within a particular temporal range or temporal profile. Appellant notes that "OR" language is used in the claims. Accordingly, in traversing the rejection, the ability for each item to overcome the prior art must be discussed.

Dependent claims 2, 16, and 30 add further claim limitations to gather empirical data and progressively refining the rule base based on the empirical data (see paragraph [0089]).

Dependent claims 3, 17, and 31 specify that the rule base provides a default rule (see paragraph [0089]).

Dependent claims 4, 18, and 32 specify that the rule base is configured to reflect regional trends, social trends, or demographic trends (see paragraphs [0022] and [0106]).

Dependent claims 5, 19, and 33 provide that one of the rules utilizes a logical product in an antecedent to determine a consequent (see paragraph [0107]).

Dependent claims 9, 23, and 37 provide that the imprecise input is spatio-temporal (see paragraph [0108]).

Dependent claims 10, 24, and 38 provide that the magnitude of participation of the input in the rules is within an interval from 0 to 1 (see paragraph [0109]).

Dependent claims 11, 25, and 39 provide that a three-valued set is defined for each



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imprecise input. Further, the three-valued set comprises a truth value, a false value, and an uncertainty value (see paragraph [0109]).

Dependent claims 12, 26, and 40 provide that the logical product of each rule comprises a value between 0 and 1 (see paragraph [0110]).

Dependent claims 13, 27, and 41 provide that the refined location is computed by selecting the rule with the highest logical product followed by using a consequent corresponding to the selected logical product as the refined location (see paragraphs [0094]-[0098]).

Dependent claims 14, 28, and 42 provide that the refined location comprises a list of candidate locations (see paragraphs [0023], [0066], [0067], and [0111]).

Dependent claims 43, 45, and 47 provide that the particular user identified location is a user identified favorite location (see paragraphs [0057], [0059], [0063], and [0081]).

Dependent claims 44, 46, and 48 provide that the particular user identified location is a recently visited location of the current user (see paragraphs [0057], [0059], and [0081]).

Dependent claims 49, 50, and 51 provide that the refined location is a list of lists of candidate locations (see paragraphs [0066]-[0067]).

## VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 44, 46, and 48 stand objected to as being a substantial duplicate of claims 43, 45, and 47.

Claims 1-5, 9-21, 23-33 and 37-51 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent 6,236,365 (LeBlanc).

These objections and rejections are being appealed herein

## VII. ARGUMENT

### A. The Objected Claims Are Patentable

The final Office Action has indicated that should claims 43, 45, and 47 be found allowable, claims 44, 46, and 48 will be objected to as being a substantial duplicate thereto. The final Office Action asserts that the specification does not define the term "favorite" and hence such term is



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interpreted as being "preferred". Further, the final Office Action asserts that since a "recently visited location" was preferred (favorite) at the time of visit, claim duplication becomes an issue.

Appellant respectfully disagrees with and traverse the claim objections. Firstly, the specification refers to a user bookmarking a location as a "favorite" location and places the term "favorite" in quotation marks (see paragraphs [0057] and [0059]). Such a use of a "favorite" location and bookmarking provides an understood meaning of the term "favorite" as a location that has been identified by the user (e.g., via bookmarking) as a favorite/preferred location. Accordingly, contrary to that asserted in the final Office Action, the specification provides and utilizes a well understood meaning of the term "favorite".

Secondly, regardless of whether the term means "preferred" (as asserted in the final Office Action) or maintains another meaning, a preferred/favorite location is clearly distinguishable from and is not a duplicate of a "recently visited location" of a user. In this regard, just because a user has visited a particular location, it does not mean that such a visited location is a preferred or favorite location. People often visit many locations that they would not identify as being a "favorite" or preferred location. For example, if a person visits a prison or attends a friend's party at a restaurant that he/she dislikes, such a location would not be a preferred/favorite location even though the user has visited such a location. Further, even when the user is at the location, it would not be a "preferred" or "favorite" location as asserted in the final Office Action. Appellant submits that the terms "favorite" or "preferred" are not equivalent to, and are not duplicative of the term "recently visited location". In this regard, the terms have completely different meanings and are not substantial duplicates under 37 CFR 1.75. MPEP §706.03(k) provides:

> Nevertheless, when two claims in an application are duplicates, or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other claim under 37 CFR 1.75 as being a substantial duplicate of the allowed claim.

In view of the MPEP section, Appellant submits that claims 43, 45, and 47 are not "so close in content that they both cover the same thing" as claims 44, 46, and 48. In this regard, a "favorite location" may not have been "recently visited". Similarly, a "recently visited location" may not be a user's "favorite" location. In fact, Appellant submits that the terms cover different things under

their commonly understood meanings. Accordingly, the claims do not cover the same thing are not duplicative.

In addition, Appellant notes that under the Examiner's logic, since independent claims likely include all dependent claims, all dependent claims would be substantial duplicates of the independent claims. Such a result is illogical and inconsistent with the well-understood meaning and use of dependent and independent claims.

In response to some of the above arguments, the Advisory Action provides:

> Concerning the objection of claims 44, 46, and 48 under 37 CFR 1.75, the claims and only the claims establish the metes an bounds of the invention. Limitations appearing in the specification but not recited in the claim are not read into the claims. The subject claims do not refer to "bookmarking a location". The examiner is obligated to interpret the claims in the broadest reasonable manner. Hence, the visit to a location can be a favorite location.

Appellant respectfully disagrees with and traverses such assertions. Firstly, if external limitations are not read into the claims, then the Examiner's interpretation of any visited location as being a substantial duplicate of a favorite location is improper. In addition, under the broadest reasonable interpretation, a favorite location may be a location that the user recently visited, a location he has never visited, a bookmarked location, etc. In this regard, a favorite location has a different meaning and interpretation than that of a recently visited location.

Further, while a recently visited location may also be a favorite location, such a fact may not be true. In this regard, Appellant submits that claims 44, 46, and 48 could in fact be dependent on claims 43, 45, and 47. Similarly, claims 43, 45, and 47 could be dependent on claims 44, 46, and 48. Thus, the terms have different meanings and provide different limitations and are not substantially duplicative of each other. Consequently, Appellant submits that it is completely illogical to assert that the terms are substantially duplicative as asserted by the Examiner.

In view of the above, Appellant respectfully requests that the objections to these claims be reversed.

B. <u>The Independent Claims Are Patentable Over The Prior Art</u>

The final Office Action provides states

> Claims 1., 15., 29.
> LeBlanc anticipates determining an approximate location of a device (**LeBlanc**, c 3, l 37-40); reading a rule base that comprises an ordered collection of rules (**LeBlanc**, c 6, l 14-32); capturing an

imprecise input (LeBlanc, c 6, I 14-32); wherein the imprecise input is based on: a proximity to a particular user identified location; a similarity between a current user's activity and a particular user identified location; a similarity between a current user's activity and a particular established activity profile; or whether a current time is within a particular temporal range or temporal profile (LeBlanc, c 3, I 29-45; EN: applicant has elected to limitations for "capturing an imprecise input" using the exclusive "or" and hence only one of such conditions need be addressed, i.e. proximity to user's location); processing the imprecise input to determine a magnitude of participation of the input in the rules (LeBlanc, c 6, I 34-48); applying the rules to the imprecise input based on the magnitude of participation to produce a logical product (LeBlanc, c 27, I 42-60); and computing a refined location based on the logical product (LeBlanc, c 27, I 42-60; Examiner's Note (EN): para 2 above applies; Leblanc involves computer implemented analysis (i.e. c 13, I 22-41)

Appellant traverses the above rejections for at least one or more of the following reasons:

(1) Le Blanc does not teach, disclose or suggest both determining an approximate location of a device and capturing an imprecise input based on a proximity to a particular user identified location;

(2) Le Blanc does not teach, disclose or suggest both determining an approximate location of a device and capturing an imprecise input based on a similarity between a current user's activity and a particular established activity profile; and

(3) Le Blanc does not teach, disclose or suggest both determining an approximate location of a device and capturing an imprecise input based on whether a current time is within a particular temporal range or temporal profile.

As stated above, independent claims 1, 15, and 29 are generally directed to refining an approximate location of a device. An approximate location of a device is obtained. Thereafter, fuzzy logic is used to refine the location. First, a rule based is obtained. Imprecise input relating to the location of the device is then obtained. The imprecise input may be based on at least one of three various criteria: (1) a proximity to a particular user identified location; (2) a similarity between a current user's activity and a particular established activity profile; or (3) whether a current time is within a particular temporal range or temporal profile. The imprecise input is then processed wherein it is determined how much (i.e., the magnitude) each input participates in the rules (of the rule set). The rules are then applied to the imprecise input based on the magnitude of participation. The rules are applied by producing a logical product. Based on the logical product, a refined location is obtained.

Thus, the claims specifically provide for two different pieces of information. First, an approximate location of a device is obtained. Thereafter, imprecise input is obtained. As set forth

in the claims, the imprecise input may be based on several items: (1) a proximity (i.e., of the approximate location of the device) to a particular user identified location; (2) a similarity between a current user's activity and a particular established activity profile; or (3) whether a current time is within a particular temporal range or temporal profile. Since the "OR" language is used, in traversing the rejection, the ability for each item to overcome the prior art must be discussed.

Again, the claims provide the ability to refine a location of a device such as a cell phone. Given an approximate location of the device, a rule base is used to refine the location. First imprecise input is captured. The imprecise input provides information regarding the location of the device. For example, the device may be close (i.e., within proximity to) a particular user identified location. Alternatively, the user's current activity (via the device) may fall within a particular activity profile (e.g., on vacation, business, etc.). In yet another alternative, the current time may fall within a particular temporal range or temporal profile (e.g., lunch time, a time the user always visits the gym, etc.). Based on the imprecise input gathered from one of the three alternatives, the amount of weight (i.e., magnitude) given to the imprecise input in refining the location is determined. Based on the weights, the input is processed by the rules to produce a logical product that is then used to compute the refined location.

As stated above, since "OR" language is used for the various alternatives, the prior art merely needs to read on any of the alternatives to render the claims as lacking novelty. Appellant submits that the final Office Action fails to establish a prima facie case of non-obviousness or lack of novelty against any of the alternatives.

The final Office Action primarily rejects the claims on the alternative relating to the particular user identified location. In this regard, Appellant notes that the final Office Action relies on the same text (i.e., col. 3, lines 29-40) to teach both the approximate device location and the proximity to a particular user identified location. Appellant submits that the arguments set forth in the final Office Action are inconsistent and cannot be true. The final Office Action asserts that the claimed approximate device location is equivalent to the location of the user. The final Office Action also asserts that particular user identified location is the location of the user.

However, if both the approximate location of the device and the particular user identified location have the same meaning, there would be no need to capture the imprecise input based on



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the proximity to the particular user identified location as set forth in the claims. In this regard, the two different terms – approximate location of a device and particular user identified location would mean the same thing. Different terminology is used in the claims, and such terms have and refer to different meanings as described above. Appellant submits that two items are referenced in the claims – (1) the approximate location of a device, and (2) a particular user identified location. The particular user identified location is not approximate and is not imprecise. Instead, the claimed location is particularly identified. The imprecise input is based on the proximity to the particular user identified location. As set forth in the claims and consistent with the terminology used in the claims, the proximity is of the approximate location of the device of the particular user identified location.

In the "Response to Arguments" section, the final Office Action asserts:

> "Proximity to a particular user identified location" is interpreted to mean, proximity defined by the set of signals related to a specific user location that is established by where the user is located which is what LeBlanc is all about. The wireless process does not disqualify LeBlanc's prior art. Favorite is not defined in the specification and is interpreted to mean preferred. Any recently visited location can be interpreted as preferred. LeBlanc's analysis of signals are related to a particular user based input...how else are such signals developed?

The above text establishes that the Examiner is interpreting the particular user identified location as a location of the user. The claims do not state "proximity to a particular user location". Instead, the claims separately set forth determining an approximate location of a device and then set forth that the imprecise input is based on a proximity to a particular user identified location. Such a user identified location is not a location of a user based on a set of signals. In this regard, the term "identified' is being completely ignored in the final Office Action. As claimed, the user "identifies" the location and such a location is not interpreted or based on triangulation of a set of signals. Under MPEP §2142 and 2143.03 "To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970)." Accordingly, the term "identified" cannot merely be ignored when judging the patentability of the claims.

The final Office Action states that LeBlanc's signals are related to a particular user based input and submits "how else are such signals developed?" Appellant submits that LeBlanc's signals are based not on user based input, but on the triangulation of a device the user happens to have. Such triangulation is not user based input and is not "a particular user identified location".

In response to the above, the Advisory Action provides:

> 2. Related to claim 1, (a) and (c) (i), the prior office actions cite the specific sections of LeBlanc et al that pertain. Triangulation satisfies determining approximate location. Again from the perspective of a broad interpretation, determining an approximate location of a device, embodies capturing an imprecise input based on a proximity to a particular user identified loaction which involves triangularization and fuzzy logic as anticipated by LeBlanc et al. LeBlanc et al teaches fuzzy logic @ c6 line 14 through c7, line 30.

Appellant respectfully disagrees with and traverses such assertions. Again, there are two pieces of information that are being examined in the claims – the approximate location of a device the proximity of that device to a particular user identified location. The Advisory action states that the triangulation reads on the approximate location of the device. Accordingly, the next step must compare that approximate location (determined via triangulation) to a particular user identified location (i.e., to obtain the imprecise input). Neither LeBlanc, the final Office Action, nor the Advisory Action indicate where such information, comparison, or imprecise input is performed in the prior art. Instead, the Advisory Action skips the two distinct elements and states that in determining the approximate location of a device imprecise input is captured based on a proximity to a particular user identified location. In this regard, the Advisory Action (and final Office Action) fail to state what aspects of LeBlanc read on the claim limitation "particular user identified location". A triangulation or the devices that perform the triangulating are not user identified locations. Instead, such triangulated devices are stationary base station cell sites (see col. 3, lines 30-45) are not identified by a user as required in the claims.

Again, none of the Actions received from the Patent Office detail how and which aspects of LeBlanc read on each aspect of the claims. Accordingly, the rejections fail to establish a prima facie case of lack of novelty or nonobviousness.

In addition, claims 43-48 would not make logical sense if interpreted as suggested in the final Office Action. For example, claim 43 provides that the particular user identified location comprises a user identified favorite location. The final Office Action submits that such a "user identified

favorite" location is merely a preferred location and is a location that the user had last visited. Such an assertion is completely without merit. In this regard, if a user identified favorite location is merely a location the user had last visited, then what portion of LeBlanc teaches the approximate location of the device as required in the claims? The final Office Action fails to establish any equivalencies or teachings of LeBlanc that read on these multiple aspects of the claims.

In addition, as stated above with respect to the claim objections, a last visited location is not a preferred location. Further, the user merely visiting a location is not equivalent to a user identified favorite location. In this regard, a user may identify a location as a favorite location without ever having visited that location (e.g., on an Internet browser, a user can type in a URL address without visiting a particular URL). Under the interpretation suggested in the final Office Action, the claimed "user identified favorite location" would have no additional meaning or significance beyond that set forth in the independent claim. Such an interpretation is improper. As stated above, each word of the claim must be evaluated. In this regard, the interpretation of a term that is wholly inconsistent with the other claims is without merit.

In view of the above, Appellant submits that the "proximity to a particular user identified location" is patentable over the prior art.

The rejection further submits that the second element that of a similarity between a current user's activity and a particular established activity profile is equivalent to a voice activity and a profile listed at col. 27, lines 35-40. Col. 27, lines 35-40 provide a table of the strength of a signal verses the past reliability of information associated with two antennae (see col. 27, lines 20-40). Thus, the text in col. 27 following the table illustrates how the table may be used. For example, when signal information is reliable and the strength is weak, then the confidence that the signal is coming from the 40$^{th}$ floor is 0.4. Thus, the table merely maps how reliable information is versus the strength of a signal to indicate whether a user is located on a 40$^{th}$ floor or not. Such a table is not equivalent to an activity profile or a current user's activity. In this regard, to construe a "current user's activity" as a the strength or reliability of a signal is without merit. Further, to construe a particular established activity profile with a table of strength v. reliability of a signal is also without merit. Such a comparison has no foundation at all.

Appellant further submits that to construe a "profile" as the table in col. 27, lines 35-40 is a complete misinterpretation of the term "profile" as used in the specification and as understood in the art or as commonly used in a dictionary. For example, paragraph [0019] of the present specification indicates examples of a profile: "e.g., is the user a business visitor, close to a place of work, or a commuter in the proximity of a train station?" Such a profile is not even remotely similar to the strength v. reliability table in col. 27. The claims specifically provide that an activity profile is a profile of an activity that has been particularly established. The final Office Action submits that voice activity is an activity. However, Appellant notes that the information in col. 27 that is being evaluated in the table is not the similarity of a voice activity but the strength and reliability of a signal for a mobile device. In this regard, no voice activity is being analyzed whatsoever. Further, a profile of a voice activity would include a particular profile or pattern used by the voice (e.g., different ranges of the voice at particular increments). Accordingly, the strength and reliability of a signal is not an activity profile of a voice or otherwise.

In view of the above, Appellant submits that the user activity and profile set forth in the claims provide clearly patentable subject matter over the cited art.

The last mechanism in the independent claims for capturing imprecise input is based on whether a current time is within a particular temporal range or temporal profile. In rejecting this aspect of the claims, the final Office Action merely submits that a radio frequency wave qualifies. Appellant respectfully disagrees with and traverse such an assertion. Firstly, regardless of whether a radio frequency wave qualifies as input that has a temporal aspect, the claims provide a detailed analysis comparing a current time to a particular temporal range or temporal profile. To interpret the "current time" as a radio wave goes far beyond the scope of the claims and has no legal foundation or foundation within the cited prior art. The claimed "current time" is the time of day as understood in the art. Without any support for a different interpretation, Appellant submits that a radio frequency is not a "current time" as set forth in the claims, as understood in the art, and as established in the specification. Further, the claims compare the current time to a temporal range or temporal profile. Again, a radio frequency is not a temporal range or temporal profile. Instead, the American Heritage Dictionary defines radio frequency as:

> **radio frequency**
> *n. Abbr.* RF

1. The frequency of the waves transmitted by a specific radio station.
2. A frequency in the range within which radio waves may be transmitted, from about 3 kilohertz to about 300,000 megahertz.

Nowhere in such a definition is there any indication of a temporal range or profile. Further, LeBlanc completely fails to conduct any comparison at all. Even assuming that radio frequency reads on the claimed limitations (which Appellant traverses), LeBlanc fails to determine whether a particular radio frequency is within a range or profile of frequencies. Accordingly, LeBlanc cannot and does not teach, disclose, or suggest, this aspect of the claims.

In response to these arguments, the Advisory Action provides:

> 4. Radio waves are expressed in cycles per second (hertz-temporal or time dependent) and are used by LeBlanc as the imprecise input @c3, lines 37-40).

Appellant respectfully traverses such a reply. Despite the fact that radio waves are expressed in cycles per second, such a teaching does not describe the current time. Further, such an expression does not teach, disclose, or suggest a temporal range or temporal profile as claimed.

Again, the claims are very specific in the terminology used and the functionality utilized with such terminology. LeBlanc fails to teach, disclose, or suggest, implicitly or explicitly, both the terminology and the functionality performed with such terminology. For example, LeBlanc fails to teach both a particular user identified location and a comparison of a proximity to the particular user identified location to obtain imprecise input. Similarly, LeBlanc fails to each a current user's activity, a particular established activity profile, and a determination of a similarity between them. Further, LeBlanc fails to teach a current time, a particular temporal range, temporal profile, and a determination of whether the current time is within the temporal range or profile.

The various elements of Appellant's claimed invention together provide operational advantages over the systems disclosed in LeBlanc. In addition, Appellant's invention solves problems not recognized by LeBlanc.

In view of the above, Appellant respectfully requests reversal of the rejection of the independent claims.

C. Dependent Claims 2, 16, and 30 Are Not Separately Argued

D. Dependent Claims 3, 17, and 31 Are Patentable Over The Prior Art

Dependent claims 3, 17, and 31 specify that the rule base provides a default rule (see paragraph [0089]). In other words, as claimed, a default rules is applied to the imprecise input based on the magnitude of participation to produce a logical product.

In rejecting these claims, the final Office Action relies on c47, 142-60. Col. 47, lines 26-65 provide:

> A low pass mobile station filter, contained within the signal classifier/low pass filter 9 of the signal processing subsystem 20, uses the above table data to perform the following functions: 1) act as a low pass filter to adjust the nominal assumptions related to the maximum number of CDMA fingers, pilots detectable; and 2) to determine the transmit power class and the receiver thermal noise floor. Given the detected reverse path signal strength, the required value of SRSS.sub.MS, a corrected indication of the effective path loss in the reverse direction (mobile station to BS), can be calculated based on the SP-5 table data contained within the mobile station table II, in the signal processing database 26.
>
> The effects of the maximum Number of CDMA fingers allowed and the maximum number of pilot channels allowed essentially form a low pass filter effect, wherein the least common denominator of characteristics are used to filter the incoming RF signal measurements such that a one for one matching occurs. The effect of the Transmit Power Class and Receiver Thermal Noise floor values is to normalize the characteristics of the incoming RF signals with respect to those RF signals used.
>
> FIG. 4, Location Provisioning from Multiple CMRSs, illustrates a system architecture to enable the customer care systems belonging to different CMRSs, either on an autonomous or periodic basis, to update a provisionable signal processing database 26, containing the mobile station characteristics, in communication with the signal classifier/filter 9, input queue 7, and the location applications programming interface for customer care systems (L-API-CCS) 139.

As can be seen, this text does not describe a default rule whatsoever. An electronic search of LeBlanc for the term "default" provides results in the preceding paragraph at col. 47, lines 7-19 and TABLE SP-5 that provides:

> Although not strictly necessary, The MIN can be populated in this table from the PCS Service Provider's Customer Care system during subscriber activation and fulfillment, and could be changed at deactivation, or anytime the end-user changes mobile stations. Alternatively, since the MIN, manufacturer, model number, and software revision level information is available during a telephone call, this information could extracted during the call, and the remaining fields populated dynamically, based on manufacturer's specifications information previously stored in the signal processing subsystem 20. Default values are used in cases where the MIN is not found, or where certain information must be estimated.

TABLE SP-5

Mobile Station Characteristics Table

| Mobile Station Identification (MIN) | Manufacturer | Model No. | Allowed S/W Revision Levels | Maximum No. of CDMA Fingers | Maximum No. of Pilots Detectable | Transmit Power Class (Max) | Rec. Thermal Noise Floor (dBm) |
|---|---|---|---|---|---|---|---|
| 3034561234567 | Sony | 5 | R1.0 | 3 | 3 | 2 | -114 |
| 3034561234568 | Qualcomm | 25 | R2.01 | 4 | 4 | 4 | -115 |
| 3034561234569 | Panasonic | 20 | R1.1 | 3 | 3 | 5 | -113 |
| 3034561234570 | Fujutshu | 15 | R2.5 | 4 | 4 | 0 | -116 |
| 3034561234571 | Sony | 45 | R1.1 | 3 | 3 | 7 | -115 |
| Default | Default | Default | R1.0 | 3 | 3 | 3 | -112 |

As can be seen, this text and Table merely provide for using default values when a mobile station identification (MIN) cannot be found. However, such default values are not for rules that are applied to imprecise input. Nor are such values applied based on a magnitude of participation determined by processed input.

Without even disclosing a default rule whatsoever, LeBlanc cannot possibly teach the use of a default rule as claimed. In view of the above, Appellant respectfully requests reversal of the rejections of these claims.

E. Dependent Claims 4, 18, and 32 Are Patentable Over The Prior Art

Dependent claims 4, 18, and 32 specify that the rule base is configured to reflect regional trends, social trends, or demographic trends (see paragraphs [0022] and [0106]).

In rejecting these claims, the final Office Action provides:

> LeBlanc anticipates the rule base is configured to reflect regional trends, social trends, or demographic trends (LeBlanc, c 28, l 1-5; Examiner's Note (EN): para 2 above applies; the regional trend relates to any localized case which is local and relates a trend).

Appellant respectfully disagrees and traverses the rejection. Firstly, col. 27, line 60-col. 28, line 5 provides:

> FIG. 43 indicates the addition of a fuzzy logic module 41 which optionally discretizes the wireless location estimate output from the TOA/DOA location estimator module 8. In the above

> case fuzzy logic rules related to the distributed antenna relation matrix would be fired or activated as a result of examining the message header data structure that indicates that the location estimate was the result of a distributed antenna case around the 40th and 41st floor of a particular building within which such fuzzy relations exist or in any other localized case sherin such fuzzy relations have been predetermined. Otherwise, in cases where no such fuzzy rules apply, the location estimate is passed to the recipient without further discretization.

As can be seen, this text merely provides for a localized case wherein fuzzy relations have been predetermined. Such a "localized case" does not describe, explicitly or implicitly, a rule base or a rule base configured to reflect regional trends, social trends, or demographic trends. The Office Action attempts to argue that a regional trend relates to any localized case that is local and relates to a trend. However, LeBlanc does not teach, describe, or suggest a trend whatsoever. As defined in the common dictionary, a trend is the general direction in which something tends to move. Just because something is local does not even remotely allude to a general direction in which something tends to move. The claimed rule base is adjusted to reflect trends in a region. LeBlanc's localized case does not have any such rule base that is adjusted or configured depending on a trend in a region. Instead, LeBlanc merely provides for firing fuzzy logic rules if a location estimate indicates a location around the 40th or 41st floor of a building or a "localized case". Again, such a description does not define, teach, disclose, suggest, or allude to a trend in any form.

Appellant also notes that anticipation under 35 U.S.C. § 102 has strict requirements that all elements of the claim must be found in a single reference in order to support an anticipation rejection (see e.g. M.P.E.P. 2131). In this regard, a claim is anticipated only when a single prior art reference discloses each and every limitation in the claim. See, e.g., *Glaxo Inc. v. Novopharm Ltd.*, 34 USPQ2d 1565 (Fed. Cir. 1995). LeBlanc fails to disclose all aspects of the claimed limitations. Specifically, LeBlanc does not disclose a "trend" as claimed. In fact, an electronic search of LeBlanc for the term "trend" provides no results whatsoever.

In view of the above, Appellant submits that LeBlanc fails to anticipate these claims and requests reversal of the rejections.

F. Dependent Claims 5, 19, and 33 Are Not Separately Argued

G. Dependent Claims 9, 23, and 37 Are Patentable Over The Prior Art

Dependent claims 9, 23, and 37 provide that the imprecise input is spatio-temporal (see paragraph [0108]). As set forth in paragraphs [0021] and [0084], spatio-temporal input means a "velocity vector" or indicating a direction of travel. Nonetheless, even if this definition is disregarded, as explicitly used in the claims, spatio-temporal input is captured and is based on one of the three options (i.e., proximity to a particular user identified location, similarity between a current user's activity and particular established activity profile, or whether a current time is within a particular temporal range or temporal profile).

In rejecting these claims, the Office Action relies on c. 16, lines 27-38 and states that radio frequency is time dependent and propagation path is space dependent. Appellant submits that the Patent Office is taking radio frequencies completely out of the context in which LeBlanc and the prior art uses them and relies on such radio frequencies in an improper attempt to apply them to the current claims.

Firstly, a radio frequency is not imprecise. Instead, the radio frequency is precise as set forth in LeBlanc. In addition, the text of LeBlanc merely refers to a propagation paths in describing "multiple 'rake' digital data receivers and searcher receivers for correlation of multiple physical propagation paths". Such a use is completely irrelevant from that of the present claims. Such a propagation path is not a spatio-temporal imprecise input.

In addition, such radio frequency and propagation paths are not based on a proximity to a particular user identified location, a similarity between a user's activity and a profile, or a current time within a temporal range/profile. The claims are specific in their requirements. Appellant again notes that anticipation under 35 U.S.C. § 102 has strict requirements that all elements of the claim must be found in a single reference in order to support an anticipation rejection (see e.g. M.P.E.P. 2131). In this regard, a claim is anticipated only when a single prior art reference discloses each and every limitation in the claim. See, e.g., *Glaxo Inc. v. Novopharm Ltd.*, 34 USPQ2d 1565 (Fed. Cir. 1995). LeBlanc fails to teach a spatio-temporal input as set forth in the claims that is based on one of the various options set forth.

In view of the above, Appellant respectfully requests reversal of the rejections.



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H. Dependent Claims 10-13, 24-27, and 38-41 Are Not Separately Argued

I. Dependent Claims 14, 28, and 42 Are Patentable Over The Prior Art

Dependent claims 14, 28, and 42 provide that the refined location comprises a list of candidate locations (see paragraphs [0023], [0066], [0067], and [0111]).

In rejecting these claims, the final Office Action relies on col. 27 line 60-col. 28, line 15. However, Appellant notes that this text (and the remainder of LeBlanc) completely fails to disclose any list of candidate locations. Instead, the portion states that the location estimate was a result of a decision between the 40th and 41st floor. In other words, LeBlanc's estimate is of a single location and is not a list of candidate locations as claimed.

In view of the above, Appellant respectfully requests reversal of the rejections of these claims.

J. Dependent Claims 43, 45, and 47 Are Patentable Over The Prior Art

Dependent claims 43, 45, and 47 provide that the particular user identified location is a user identified favorite location (see paragraphs [0057], [0059], [0063], and [0081]).

The final Office Action rejects these claims as follows:

> LeBlanc anticipates the particular user identified location comprises a user identified favorite location; recently visited location of the current user (LeBlanc, Fig. 41; EN: "favorite" is not defined in the specification and hence "preferred" is the related interpretation; the route map of Fig 41 provides the preferred location from point X to point Y and identifies those locations recently visited as one moves from point x to point y).

Appellant respectfully disagrees and traverses these rejections. Firstly, a "favorite" location is clearly defined in the specification as stated above. Such a "favorite" location is bookmarked by a user. Nonetheless, even if this definition is ignored and the commonly used meaning is provided, LeBlanc still fails to anticipate the claim. Further, even utilizing the Examiner's suggested meaning of "preferred", LeBlanc still fails to meet the claim limitation.

The logical problem with the rejections argument is that a "preferred" location does not mean and does not anticipate a recently visited location. A recently visited location is a location that was visited recently in time. However, a "preferred" location is a location that is more desirable or has more value (see The American Heritage® Dictionary of the English Language, Fourth Edition

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http://dictionary.reference.com/search?q=prefer). Accordingly, the mere fact that a user has recently visited a particular location does not mean nor does it anticipate whether the user has a preference or has deemed that location more desirable or as having more value. Again, people visit locations all the time out without preferring or identifying the location as a favorite location. For example, people attend funerals at cemeteries all of the time but one would hesitate to state that a cemetery is a person's favorite location or that the cemetery is more desirable to visit than another location. Accordingly, not only is the Patent Office equating the term "favorite" to the term "preferred", but under either definition, such a location is not a recently visited location.

In addition to the above, Appellant submits that LeBlanc also fails to teach a preferred location or recently visited location. In rejecting these claims, the Office Action relies on a route map in FIG. 41 which merely "illustrates how traveling instructions from two different points can be provided to an initiator" (see col. 16, lines 1-2). Col. 69, lines 32-34 further describe FIG. 41:

Referring to FIG. 41, the information shown in the columns labeled "Turn #, "Directions", "And Go", and/or "Total Miles", can then be parsed from the http response information". Thus, contrary to that asserted in the final Office Action, FIG. 41 does not show or indicate either a preferred location or a recently visited location. Instead, it merely illustrates directions from one location to another location. Such a teaching wholly fails, explicitly or implicitly, to even remotely allude to the limitations set forth in these claims.

In view of the above, Appellant respectfully requests reversal of the rejections.

K. Dependent Claims 44, 46, and 48 Are Patentable Over The Prior Art

Dependent claims 44, 46, and 48 provide that the particular user identified location is a recently visited location of the current user (see paragraphs [0057], [0059], and [0081]).

Appellant reasserts the arguments above relating to recently visited locations set forth above relating to claims 43, 45, and 47. In addition, Appellant notes that neither the cited text or the remainder of LeBlanc teaches, discloses, or suggests, explicitly or implicitly, a recently visited location, or the use of a recently visited location upon which imprecise input is based (as set forth in the claims).

In view of the above, Appellant respectfully requests reversal of the rejections.

L. Dependent Claims 49, 50, and 51 Are Patentable Over The Prior Art

Dependent claims 49, 50, and 51 provide that the refined location is a list of lists of candidate locations (see paragraphs [0066]-[0067]).

In rejecting these claims, the final Office Action refers to LeBlanc FIG. 41 and states that the directions for getting from one location to another location read on the list of lists as claimed. Appellant disagrees and traverses such an assertion.

Firstly, LeBlanc's directions are not refined locations that are computed as set forth in the claims. Instead, it is merely a list of instructions that allows a user to navigate from a start location to an end location. Such a list of instructions is not even remotely similar to a computed refined location that is computed based on logical products from imprecise input, rules, and a magnitude of participation as claimed. In addition, these dependent claims specifically provide that the location is a list of lists of candidate locations. Appellant submits that neither an immediate travel section distance nor a cumulative distance is similar or anticipates a list of lists of candidate locations of a device. There is simply no similarity whatsoever between the cited text (or the remainder of LeBlanc) and the claim limitations.

In view of the above, Appellant respectfully requests reversal of the rejections.



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VIII. CONCLUSION

In light of the above arguments, Appellant respectfully submits that the cited references do not anticipate nor render obvious the claimed invention. More specifically, Appellant's claims recite novel physical features which patentably distinguish over any and all references under 35 U.S.C. §§ 102 and 103. As a result, a decision by the Board of Patent Appeals and Interferences reversing the Examiner and directing allowance of the pending claims in the subject application is respectfully solicited.

Respectfully submitted,

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## APPENDIX

1. A computer implemented method for refining a location of a device comprising:

(a) determining an approximate location of a device;

(b) reading a rule base that comprises an ordered collection of rules;

(c) capturing an imprecise input, wherein the imprecise input is based on:

(i) a proximity to a particular user identified location;

(ii) a similarity between a current user's activity and a particular established activity profile; or

(iii) whether a current time is within a particular temporal range or temporal profile;

(d) processing the imprecise input to determine a magnitude of participation of the input in the rules;

(e) applying the rules to the imprecise input based on the magnitude of participation to produce a logical product; and

(f) computing a refined location based on the logical product.

2. The method of claim 1 further comprising:

gathering empirical data; and

progressively refining the rule base based on the empirical data.

3. The method of claim 1 wherein the rule base provides a default rule.

4. The method of claim 1 wherein the rule base is configured to reflect regional trends, social trends, or demographic trends.

5. The method of claim 1 wherein one of the rules utilizes a logical product in an antecedent to determine a consequent.

6.-8. (CANCELED)



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9. The method of claim 1 wherein the imprecise input is spatio-temporal.

10. The method of claim 1 wherein the magnitude of participation is within an interval [0,1].

11. The method of claim 1 wherein a three-valued set is defined for each imprecise input, wherein the three-valued set comprises a truth value, a false value, and an uncertainty value.

12. The method of claim 1 wherein the logical product of each rule comprises a value between 0 and 1.

13. The method of claim 1 wherein the refined location is computed by:

selecting the rule with the highest logical product; and

using a consequent corresponding to the selected logical product as the refined location.

14. The method of claim 1 wherein the refined location comprises a list of candidate locations.

15. An apparatus for refining a location of a device comprising:

(a) a computer having a memory;

(b) an application executing on the computer, wherein the application is configured to determine an approximate location of a device;

(c) an inference engine executing on the computer, wherein the inference engine is configured to:

(i) read a rule base that comprises an ordered collection of rules;

(ii) capture an imprecise input, wherein the imprecise input is based on:

(1) a proximity to a particular user identified location;

(2) a similarity between a current user's activity and a particular established activity profile; or



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(3) whether a current time is within a particular temporal range or temporal profile;

(iii) process membership functions stored in the memory of the computer, wherein the membership functions define a magnitude of participation of the input in the rules;

(iv) apply the rules to the imprecise input based on the magnitude of participation to produce a logical product; and

(v) compute a refined location based on the logical product.

16. The apparatus of claim 15 wherein the application is further configured to:
gather empirical data; and
progressively refine the rule base based on the empirical data.

17. The apparatus of claim 15 wherein the rule base provides a default rule.

18. The apparatus of claim 15 wherein the rule base is configured to reflect regional trends, social trends, or demographic trends.

19. The apparatus of claim 15 wherein one of the rules utilizes a logical product in an antecedent to determine a consequent.

20.-22 (CANCELED)

23. The apparatus of claim 15 wherein the imprecise input is spatio-temporal.

24. The apparatus of claim 15 wherein the magnitude of participation is within an interval [0,1].

25. The apparatus of claim 15 wherein a membership function defines a three-valued set for each imprecise input, wherein the three-valued set comprises a truth value, a false value, and an uncertainty value.



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26. The apparatus of claim 15 wherein the logical product of each rule comprises a value between 0 and 1.

27. The apparatus of claim 15 wherein the inference engine is configured to compute a refined location by:

selecting the rule with the highest logical product; and

using a consequent corresponding to the selected logical product as the refined location.

28. The apparatus of claim 15 wherein the refined location comprises a list of candidate locations.

29. A program storage device, readable by a computer, tangibly embodying at least one program of instructions executable by a computer to perform method steps for refining a location of a device, wherein the method steps comprise:

(a) determining an approximate location of a device;

(b) reading a rule base that comprises an ordered collection of rules;

(c) capturing an imprecise input, wherein the imprecise input is based on:

(i) a proximity to a particular user identified location;

(ii) a similarity between a current user's activity and a particular established activity profile; or

(iii) whether a current time is within a particular temporal range or temporal profile;;

(d) processing the imprecise input to determine a magnitude of participation of the input in the rules;

(e) applying the rules to the imprecise input based on the magnitude of participation to produce a logical product; and

(f) computing a refined location based on the logical product.

30. The program storage device of claim 29, wherein the method steps further comprise:



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gathering empirical data; and

progressively refining the rule base based on the empirical data.

31. The program storage device of claim 29 wherein the rule base provides a default rule.

32. The program storage device of claim 29 wherein the rule base is configured to reflect regional trends, social trends, or demographic trends.

33. The program storage device of claim 29 wherein one of the rules utilizes a logical product in an antecedent to determine a consequent.

34.-36. (CANCELED)

37. The program storage device of claim 29 wherein the imprecise input is spatio-temporal.

38. The program storage device of claim 29 wherein the magnitude of participation is within an interval [0,1].

39. The program storage device of claim 29 wherein the method steps further define a three-valued set for each imprecise input, wherein the three-valued set comprises a truth value, a false value, and an uncertainty value.

40. The program storage device of claim 29 wherein the logical product of each rule comprises a value between 0 and 1.

41. The program storage device of claim 29 wherein the method steps compute the refined location by:

selecting the rule with the highest logical product; and

using a consequent corresponding to the selected logical product as the refined location.



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42. The program storage device of claim 29 wherein the refined location comprises a list of candidate locations.

43. The method of claim 1 wherein the particular user identified location comprises a user identified favorite location.

44. The method of claim 1 wherein the particular user identified location comprises a recently visited location of the current user.

45. The apparatus of claim 15 wherein the particular user identified location comprises a user identified favorite location.

46. The apparatus of claim 15 wherein the particular user identified location comprises a recently visited location of the current user.

47. The program storage device of claim 29 wherein the particular user identified location comprises a user identified favorite location.

48. The program storage device of claim 29 wherein the particular user identified location comprises a recently visited location of the current user.

49. The method of claim 1 wherein the refined location comprises a list of lists of candidate locations.

50. The apparatus of claim 15 wherein comprises a list of lists of candidate locations.

51. The program storage device of claim 29 wherein comprises a list of lists of candidate locations.



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